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ABSTRACT

This study examined how a sample of pre-university Singaporean adolescents (N=212) with an average age of 17 years 5 months attending a variety of junior colleges perceived and managed different sources of stress. Measures of stress included Behavior Profile, Life Events, School Stress Factors, Home-School Stress Conditions and Stress Symptoms. The results showed that several features of Type A behavior emerged, and that school examinations, job aspirations, school work, and homework were the principal stressors. Fear of the unexpected, exhaustion and lack of concentration were the most quoted stress symptoms. Science students appeared to be more stressed than arts students. Listening to music, reading, and exercise were among the main stress management strategies employed by these adolescents at home. In school, stress was managed by self-control, self-sufficiency, and sharing problems with peers. (Author/ABL)

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Stress and Schooling : A Search for Stress Profiles of Adolescent

Students

A B S T R A C T

The research discussed in the present paper, set out to find how a sample of Singaporean adolescents perceived and managed different sources of stress. The sample totalled 212 pre-university students with equal numbers of boys and girls, and a mean age of 17 years 5 months. The students attended a number of junior colleges in the republic, with the sample ethnicity reflecting national proportions. Measures of stress included Behaviour Profile, Life Events, School Stress Factors, Home-School Stress Conditions and Stress Symptoms. All measures were administered as questionnaires.

The results showed that several features of Type A behaviour emerged and that school examinations, job aspirations, school work and homework were the principal stressors. Fear of the unexpected, exhaustion and lack of concentration were the most quoted stress symptoms. Science students appeared to be more stressed than arts students.

Among the main management strategies employed by these adolescents at home, were listening to music, reading and exercise. While stress in school was managed through self control, self-sufficiency and sharing problems with peers. In the main most students seemed to be able to cope by adapting to stressful situations as they arose at a particular time.

Some of the more important implications of the above findings are discussed in the context of schooling in Singapore and in the wider context of society.

Stress and Schooling: A Search for Stress Profiles of

Adolescent Students

Introduction

This paper is concerned mainly with how Singaporean pre-University adolescent students perceive stress through self report and what is implied in the findings for teachers and parents of adolescents and to some extent for society in Singapore.

In countries where there are few natural resources there is always a high premium put on developing human potential. Such countries are often committed to considerable expenditure on education with high expectations of social and societal outcomes. One of the effects of these high expectations, is the stress that children experience in order to achieve in school. Furthermore, the effects of stress are not only confined to school but in the home and other environments.

The research which is reported in this paper was carried out by the author* in collaboration with some trainee students at the Singapore Institute of Education, teachers and pre-university students from Singapore schools and colleges **. The nature of the research reported here is psychological but with emphasis on the implications the findings may have for teachers, parents and others closely associated with the education process.

* The author was a full time educational psychologist for 5 years at the Singapore Institute of Education.

** The author wishes to acknowledge the valuable part played by trainees and teachers who made this research possible, as well as the pre-university students who so willingly responded to our questionnaires.

The population of Singapore is just over 3.4 million living on a small land mass the size of the Isle of Wight. This is relatively small when compared to Singapore's neighbours such as Thailand, Indonesia and Malaysia, Cowan and Maclean(1984). The ethnic proportions of the population are 76% Chinese, 15% Malay, 7% Indians and the remaining 2% Eurasians. It is a city state without a significant rural or agriculture sector. It however achieved a rate of economic growth and degree of industrial development unparalleled by any other S.E. Asian economy in the 1960's and 1970's, although in recent years it has been overtaken by Taiwan, Hong Kong and South Korea.

These economic conditions have meant that education in Singapore has become universal at the primary level and almost so at the secondary level. Technical and vocational education is well developed and although access to tertiary education is selective, there is a variety of institutions for students who qualify for them to choose from.

The education system according to Seah and Seah (1983) emphasises apart from politicisation, gaining of knowledge and socialisation of its populace and ensuring that economic growth and development is the supreme and overriding objective. Because of Singapore's lack of resources, redeemed only by its strategic location, natural harbour and abundant labour force, the development of human resource is crucial. Since human resources form a significant component of Singapore's limited resources, the economic consideration is obviously to educate as many of the schoolgoing population as high up the education ladder as possible.

The findings of the Goh Report (1979) showed that there was considerable wastage at all levels of the education system, and so a new education system was proposed which put much store on selection as early as possible in the system. The first streaming exercise takes place when the child is about 9 years old. The second selective process is when the child is between 12 and 13 years old and then at 16 years there are the GCE 'O' level examinations followed by the 'A' level examinations for those who proceed to Junior College.

The system therefore described above, is a potential scenario for stressful schooling and although according to Gopinathan (1986), educational opportunities are available and the academic competition amply rewarded, there is a widespread belief that the system is stressful and overcompetitive. If we take schooling to encompass not only the time spent on learning and teaching in class but home conditions involving living space, parental and sibling pressure, peer attitudes towards achievement and aspiration, as well as employer's demands and those of tertiary education, we can identify a number of key potential stressors. These are

- (a) The School System
- (b) Parents, Siblings and Peers
- (c) Societal and Environmental Influences

While research into stress and schooling is only now beginning to be of interest in Singapore Thomas (1985)(1987), this research area has had considerable attention paid to it by workers in America and other Western countries. However, from

what has been said earlier in this paper, the conditions in the Republic of Singapore seems to be ripe for exploring in further detail, various facets to the subject of stress as it relates to schooling and childrens' home conditions. Before discussing the research which was carried out in this study, it is necessary to establish what stress is and how different views of the phenomenon are used in research.

The Nature of Stress

Inspite of the apparent chaotic disagreement over the definition of the term stress Rutter (1981), it is incredibly persistent in its use in biology, medicine, psychology. As long as it is used in a sufficiently vague and general way it appears to be understood by both layman and academic, Cox (1978).

However, attempts have been made to arrive at more precise definitions of stress. We have Selye's general adaptation syndrome which describes a form of bodily reaction or response. Rutter (1981) has commented on the over-wide nature of the term, stating that a more discriminating analysis of stressful life events or happenings might lead to a clearer concept. This hopefully will provide a better understanding of the processes involved in stress. Lazarus (1971) has emphasized that occupational stress is not a characteristic of either the work environment or the person, but a consequence of the two interacting together. He sees the individual's cognitive

appraisal of a situation that defines it as stressful. A person's appraisal can be irrelevant, benign positive or stressful. In an irrelevant appraisal, the situation has no impact, in a benign positive appraisal, the encounter a person makes is positive, while in a stressful situation harm, threat or challenge is experienced. In other words, stress is experienced when a person who has exceeded his resources and is in danger of harming his or her well being. Adjustment and coping are at the core of recent approaches to stress, and are underlined significantly by Lazarus's (1966 and 1976) seminal work on prescriptive models and classifications.

The process orientated approach towards coping provides another alternative way of examining the nature of stress. This has been the line of research which Meichenbaum (1977, 1983) and Schonpfug (1983) have emphasized. Stressful situations are treated as problem situations and coping as a form of problem solving behaviour. The development of stress and coping as problem and problem solving model shows the importance of cognition in stress theory. Cox (1978) also views stress in terms of a rational model and emphasizes the perceptual nature of stress rooted in the individuals' cognitive appraisal of his situation. In a later article, Cox (1987) amplifies the cognitive nature of the rational model, in which it could provide a framework for training individuals in personal coping skills, and for planning interventions at both the individual and organisational levels.

For the purposes of the present research, stress is conceptualised along the lines of Meichenbaum and Schonpfug. That is, the stressful situation is viewed as a problem and the management of stress is a venue for solving the problem.

Schooling and the Nature of Stress

When one views the nature of stress in the context of schools and schooling, an intricate set of relationships needs to be considered which involve teachers, pupils, parents and school policy makers. All have their roles to play in the process of schooling and education. All are subject to varying degrees of stress and each in their turn may be the actual causes of stress. In this paper, I am particularly interested in examining the stress that pre-university students perceive, and so the focus of the research is directed towards this group.

Research into pupil and teacher stress in the USA, UK and other countries has increased significantly in the last decade as the demands of modern living increase the likelihood of stress becoming a real problem. Thoresen and Eagleston (1982) have developed a model of Chronic Stress in Children and Adolescents as part of the Stanford Health in Youth Project. They felt that many needs of youth concerning stress needed to be assessed and evaluated. They also saw the need to equip youth with appropriate resources to manage chronic stressful situations.

Dunham (1976, 1977, 1981) working in the United Kingdom on Pupil stress and Teacher stress, sees the importance of identifying situations which disruptive pupils produce in the establishment of stress in classrooms. By identifying such situations e.g. rowdyism, theft, violence, a better understanding of stress and responses to stress can be obtained so that working conditions in school and community may be improved.

Another model used to assess the level of stress in youth as well as adults has been the Type A Behaviour Pattern (TABP) developed by Friedman and Rosenman (1974). This has been used extensively in identifying these types in College students - eg Waldron Hickey et.al (1980); with high school students - Butensky, Farrell, et. al (1976); and with younger school age children; Matthews and Angula (1980). However, while identifying TABP is of importance to the study of stress there is still much to do in the area of demands made on youth to manage chronic stress. Coddington (1972a 1972b) began work revising the lists of major events and changes that might confront children, but again while his work is valuable it does not go into the intricate process and mechanisms involved with stress states.

Erikson (1968) is well known for his theoretical position concerning developmental crisis which present challenges to youth, and researchers such as Hamburg (1974) Burke & Weir (1978) and Hamburg and Hamburg (1978) have chartered key transition times and

associated tasks or challenges in high school and college students in the U.S.A. The work of Antonovsky (1979) has gone further in this respect and actually provided a comprehensive picture of major resources that are useful in balancing demands with responses. Antonovsky's lists ranges from the material and physical (money strength), through to cognitive (self concept) to interpersonal play (friendships).

While research carried into stress with children has been fairly extensive in the USA; in a contrast to this, the Singapore situation has received, until the present study, little attention as an organised research field. This however, is not to say stress in school children has not received its fair share of media attention. Initial studies by Thomas (1985) (1987) have been carried out on Singapore adolescents. The present author found that homework overload, homework depression and homework difficulty were perceived as the main stressors by secondary school adolescents. It was found "educational stress" was particularly initiated by parents; and peers who were doing well and who may take a superior attitude towards those students not doing so well.

The present paper refers to research carried out by the author Thomas (1987) of which only a portion will be discussed here.

Therefore the aims of this paper are as follows:

- (1) To trace out some of the more characteristic features that contribute to a stress profile of pre-university students.
- (2) To examine the ways in which pre-university students manage their stress.
- (3) To discuss the implications the findings may have for Schooling and Society in general.

The Sample

The sample of pre-university students attended a number of junior colleges with an above average academic record. The number of students included in the study was 212 of which about half were in their first year and the other half in their second year. The number of girls and boys were exactly half. The ethnic proportions were 75% Chinese, 10% Malay, 10% Indian and the remaining 5% Eurasian. The mean age was 17 years 5 months covering an age span of 16 years - 19 years. Forty five percent of students studied Arts and Commerce subjects and the remaining fifty five percent Science. The socio-economic status of the fathers of the students reflected 50% from low income groups and the remainder fairly evenly distributed between middle and high income categories. (See Appendix 1 for further details of the sample for the whole study).

Instrumentation

- (1) Behaviour Profile - including self rating of items such as punctuality, competitiveness.
- (2) Life Events - ticking of 22 events some or all of which had occurred to the students over 1 year.
- (3) School Stress Factors - rating the extent to which certain items eg. workload, school examinations were perceived as sources of stress.
- (4) Home and School Stress Conditions - rating items which contributed to stress such as home noise homework conditions.
- (5) Stress Symptoms - how often they experienced headaches, breakdowns.
- (6) Coping Mechanisms - open report of how they coped at home in school and other places with their stress.

More details concerning the above instruments can be obtained from Appendix 2a-e.

Results

The Behaviour Profile Measure gives an indication of the respondent's perception of personality traits such as punctuality, determination, competitiveness and general fast pace of life. These traits are in fact marked features of this sample of students. From the author's

knowledge of the life of Singaporean pre-university students, such a profile is not unexpected. The four traits specifically mentioned above shows that this sample indicates several key TABP characteristics and the F Value in Appendix 3 shows the mean differences for selected items are significantly different, with punctuality and pace of life and those items with a similar range of mean values to be contributing significantly to this type of profile.

Life Events

The life event measure with all its shortcomings does supply some form of social background information to each respondent's stress situation. School tests, school holidays and less happy family changes, are the most common events. Changes in school and parental pressure to do well in school was cited by less than 50% of respondents. Other events such as attaining high school grades, vacation time spent at school and break-up of friendships appear to be cited by less than 30% of the sample. Clearly, school tests are events which happen to most children and with the concern felt by children about school tests and to do well in them, such a life event needs to be accounted for in examining an adolescents stress profile. The results in Appendix 4 show differences in mean values between Arts and Science students and between males and females as to their life event experiences. The values throw some light on the

various backgrounds to these categories of our sample. If life events are indicators of a stress substratum, then the gender differences and the choice of subjects may give us valuable information about our sample of adolescents' stress profiles.

School Stress

The results for this measure show how school examinations, school workload and schoolwork done at home figure highly in these adolescents' perceptions of their stress. Stress too is also seen to be associated with job aspirations.

The stress perceived through relationships with school personnel such as School Principal and Discipline Master plus the ever present threat of school rules are not perceived as highly as school tests and job aspirations.

However, the teachers who teach these adolescents are perceived as greater sources of stress than those occupying higher status roles. This is probably due to more frequent contact with their students.

Travelling to school which in Singapore can be time consuming and uncomfortable due to the hot climate is also perceived as

having less stressful consequences than items depicting school situations. It is likely that Singapore adolescents are well adapted to this part of their daily routine and find in travelling time a chance to sleep, which is a coping mechanism quoted by many in the present study.

The mean differences between selected items shown in Appendix 5 are significant; underlining the role school examinations play when compared to other sources of stress. There is it seems here, a tie up with the background information from life events in which the most cited life event i.e. school tests is also perceived as being the greatest source of stress for these adolescents.

Home School Related Stress

The Results for this measure shows that restricted time for homework, and depression about school performance have amongst the highest mean values; while differences with teachers and excessive noise at home and school are seen as contributing less to stress as the lower mean values testify. The mean difference between selected items in Appendix 6 shows the differences to be significant at the $p < .001$ level. The results emphasize that time, when manipulated in the form of strict deadlines, is perceived to produce considerable stress especially when it comes to homework.

On the other hand relations with teachers and environmental factors such as noise are rated low. It appears that interpersonal relations concerning students and their teachers, are seen to be less stressful than the demands teachers make, and the time restrictions on homework that originate from these demands. One could say that the emphasis on high achievement is being passed on by the teachers in the demands they make on children to do homework, and complete it on time.

Stress Symptoms

Breakdown and sleep problems considered by most clinicians as among the key stress symptoms were rated low by this sample as were headaches. However, worry about the unexpected and problems concerning concentration proved to be the most likely symptoms of stress.

With all the demands which are made on pre-university students and the fairly strict homework routine that many of them have, anything that is an extra demand and unexpected is a likely source of stress. The unexpected demand may be more homework, peer competition, emotional upset. Again, the high mean value (see Appendix 7) obtained for mental exhaustion and difficulties in concentration is an expected finding, in view of the fact that with the pressures and demands made on Singaporean pre-university students, inability to concentrate due to exhaustion and tiredness is commonplace.

The values for selected items in Appendix 7 show the means for breakdown and for the unexpected. The differences between these values are significant. This provides encouragement in so much that if breakdown is rated the lowest perceived symptom, then for this sample the managing and coping strategies which are adopted and discussed later in this paper appear to be successful in counteracting extreme outcomes of high stress situations.

Stress and Students's Subject Choice

When one compares the results between students who choose to study science and those who choose arts subjects in their perception of stress symptoms and Home-School Stress, and Perception of Stress Symptoms and School Stress; an interesting trend emerges. From table 1, it can be seen that science students show a considerably higher level relationship between these measures than arts students. In other words, not only are science students' perceptions of school and home stress greater than their counterparts in the arts classes but they express it in their perception of stress symptoms. The results for Arts students show that their levels of perceived stress are negatively correlated with stress symptoms; indicating that not only are arts students' perceived stress lower than that for science students but that their expression of symptomatic

stress is minimal. It is generally held by most Singaporean teachers and students that science students occupy a more competitive position, they are subject to more demands being made on them by the school and are selected early in the system to become science students. Also in view of the greater demands on science students' time compared with arts courses especially in terms of laboratory practical sessions, science students have more contact time with school and more homework to do when they get home.

Table 1

Correlation Values for global score comparisons between Home-School Stress Measures; Stress-Symptoms Measure and other Stress Measures in Science and Art Students N= 207+

Home and School Stress Measure

	<u>Science Student</u>	<u>Arts Students</u>
Means	35.60	33.80
Standard Deviation	5.25	6.52
N	117	90
Behaviour Profile	0.05	0.29 *
Life Events	0.23	0.25 *
School Stress	0.46 **	0.41 **
Stress Symptoms	0.49 **	0.17

Stress Symptoms Measure

Means	16.60	17.7
Standard Deviation	3.56	4.50
N	117	90
Behaviour Profile	0.13	0.04
Life Events	0.37 **	0.14
School Stress	0.52 **	- 0.10
Stress Symptoms	0.49 **	0.17

+ 5 Commerce Students removed from total sample.

* p < .01

** p < .001

How Students managed Stress

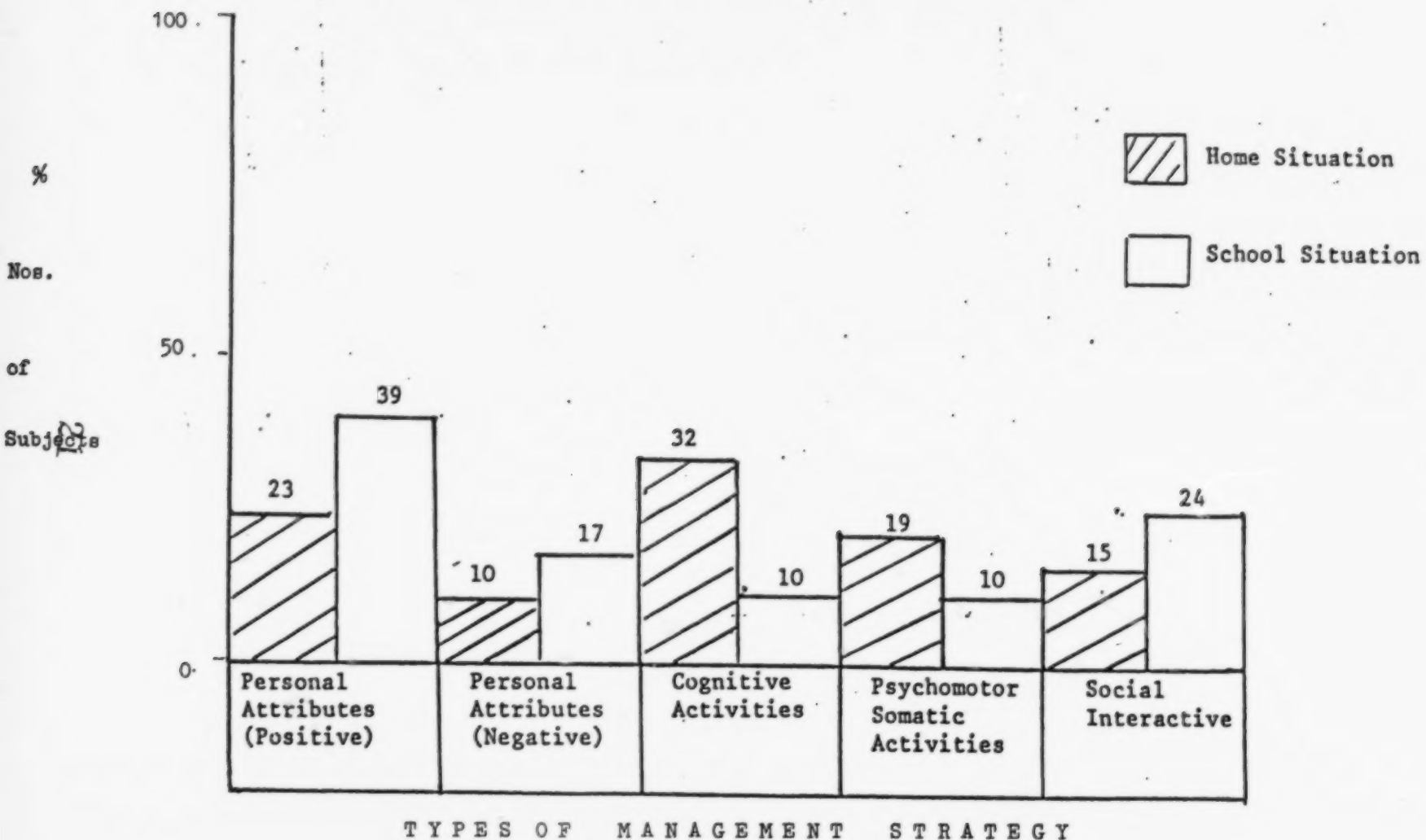
A second aim of the present paper is to examine how students are able to cope or manage the stress they perceive. In our questionnaire students were asked to put under three main headings namely, Home, School and Others, how in these situations they coped best with stress. Only the results for home and school will be discussed here in view of the fact that the data from Other Events Category revealed little of any consequence. The data in Table 2 and further represented in Figure 1 shows four types of Coping Strategy which this sample of students came up with.

Table 2

% Number of Students citing the principal ways in which they cope with stress at home and school

Types* of Coping Strategy	Home Events	School Events
Personal Attributes (1) positive	23	39
Personal Attributes (2) negative	11	17
Cognitive Activities	32	10
Psychomotor/Somatic Activities	19	10
Social Interactive	15	24
<u>*Personal Attributes</u> include:	<u>Psychomotor/Somatic</u>	
Self Sufficiency)	Walking	
Self Control) Positive	Jogging	
Organisational Approach)	Sport	
	Sleeping	
Avoidance)		
Escapism) Negative	<u>Interactive</u>	
Truancy)	Peer discussion	
Suicidal)	Siblings	
	Family	
	Teachers	
	Church Members	
<u>Cognitive Activities</u>		
Reading		
Writing		
Listening to Music		
Watching TV		

Figure 1 **% Numbers of Students' Choice of Coping Strategy for Home and School Situations (N = 212)**



Analysis of the protocols showed that responses fell into four main categories . These were (1) Personal Attributes which were of two further types positive and negative (2) Cognitive Activities (3) Psychomotor/Somatic Activities and (4) Social Interactive.

Personal Attributes which were positive included being self sufficient, being able to organise one's self or able to control the situation to cope with stress.

Negative Personal Attributes include avoidance of the problem, ignoring the situation, escapism, truancy and suicide.

Cognitive activities included listening to music, reading, writing, analysing the situation and watching television.

Psychomotor/somatic activities emphasised walking, jogging and other forms of physical exercises. Sleeping and eating also came under this category. Finally, Social Interactive included consultations and discussion of problems with peers, siblings, other family members, teachers and church members.

Managing Stress at Home

Stress perceived in home situations appears to be managed by all four categories, but clearly Cognitive Activities are cited the most by these adolescents with listening to music the most quoted. Self analysis and reading were also among the

most commonly quoted ways of managing stress. Positive personal attributes such as being able to control the situation, being self sufficient and tackling the problem contributed markedly to this category of personal attributes. Managing stress through resorting to positive personal attributes appear to be the second most popular form of managing stress at home. Taking exercise and various form of physical activity such as walking were other ways in which these students coped with stress while sleep also figured highly in this category. Social Interactive activities cited mainly siblings, parents and to a lesser extent peers.

Managing Stress at School

In examining the main types of coping strategies for school situations there is a distinct change of the most cited type of stress management. Positive personal attributes such as self analysis, thinking the problem through, trying to solve their own stress figured prominently in this, the most cited type of strategy. The second mode of coping was through interactive strategies; and discussion with peers was by far the most commonly mentioned. Cognitive and Psychomotor/Somatic activities were together seen as less important in the ways the students coped. A perhaps rather less encouraging aspect to this part of the findings is that more students cited negative personal characteristics such as social withdrawal ignoring situations, escapism and contemplation of suicide in a few cases.

Discussion

The third aim of the present paper is to draw out some of the more important lessons that the present findings show into the nature of adolescent stress and the management styles they use within and without school. Equally important, would be the implications these findings have for the teachers, parents and society as a whole. Therefore the school system as a stressor, will be examined firstly; secondly parents and peers as potential sources of stress and finally, Societal and Environmental Influences on student stress.

The School as a Stress Nexus

The results show that several Key TABP traits such as determination, being competitive, concerned about punctuality appear to contribute markedly to the stress profile of our adolescent sample. The evidence from measures of life events and those of School and School-Home emphasise the dominant perception of how examinations, homework, school tests and job aspiration contributes to the perceived stress of these adolescents. While stress symptoms such as worry, exhaustion, difficulties in concentration were perceived as fairly common occurrences as a result of perceived school and school-home stress; extreme exhaustion and mental breakdown was not a feature of these students' stress profiles. This is very reassuring to know for all those concerned with the educational process inside as well as outside Singapore. It appears we have in our sample of adolescents a certain level of perceived stress which from the results on Stress Symptoms and the

various types of stress management strategies that students use; indicate most adolescents adapt to their sources of school stress. It further appears that when we break our sample down into those students selecting science and arts (humanities) subjects, the science students are significantly more stressed and this is shown particularly in their report of stress symptoms.

While the nexus school influences is certainly perceived by students as promoting stress especially through examinations, tests and the influence of teachers' demands, the students have grown use to certain levels of expectations and for the most part adapt and deliver what is expected of them.

It is possible to conclude from this, that the demands of the school system are bearable and perhaps even higher levels of expectations on the part of teachers, principals, and the students themselves would enhance educational attainment more.

This would be a matter of further research but it is likely that the full extent of a student's adaptability could be a crucial a factor here. The results from this study show that while extreme stressful situations were perceived by only 5% - 6% of the sample for any one item, these figures are bound to rise more steeply if stressors such as more deadlines and demands for higher standards by teachers assume greater importance. The principal lesson perhaps that both students and their teachers might observe here may be summed up as : Let our teachers encourage pupils to achieve their utmost; but not at any cost !. The teachers and the system they represent, are the single

most important factor controlling the optimum level of stress in school, so that "learning without tears" rather than "learning with tears" should be the norm to ensure sound mental health in school life.

Parents and Peers as Stressors

Contrary to my earlier findings with secondary students Thomas(1985), stress sources such as peer competition and parental influences were not perceived so highly with these students. In fact, both parents and peers contributed to improving stress management. Parents either did not figure in the perceptions of these adolescents' stress sources or if they did, the frequency for items rated in expressing extremes or near extremes fell between 5 and 10 percent. Clearly, the older the children become, the more responsible they feel about their homework and schooling in general. Parental pressure it seems becomes "translated" in the minds of many adolescents into parental support as shown by examining the protocols on students' coping strategies.

Parents were often cited as sources as support when it came to problems at school. Peers figured markedly in the frequency when they were consulted in times of stress and this is to be expected for the age range of these adolescents. Peers as sources of stress through competition was not a feature of these results. Again, the development within the individual of a greater degree of autonomy and responsibility towards schooling, is probably a factor which accounts for these results. The role of parents and to some extent that of peers appear to change as adolescents reach the

pre_university level. They are now seen as among key actors in assisting students to adjust and cope with stress. The parents are seen as support agents while peers are viewed as active partners in sorting out problems. The education system should enhance these roles wherever possible, by allowing parents more access to colleges and giving more opportunities within the curriculum for student interaction and discussion.

Societal and Environmental Influences as Stressors

Singapore has been fortunate to have over the past few years full employment and so adolescents leaving school for the job market have been able to pick and choose. Also job mobility has been a fairly frequent phenomenon. However, during the period of this research the Singapore economy suffered a mild recession and the job market began to shrink. This meant that adolescents particularly without the appropriate qualifications found it difficult to obtain any job. This was reported widely in the press and had its impact on children and adolescents currently in school. The results here show how perceived stress related to the item on 'job availability after qualifying at school', was amongst the items that obtained the highest mean values. As children get older they become more aware of what career they should take up. This means that the curriculum subjects that are chosen and how well they succeed in them are of crucial concern. In conditions of economic stringency, adolescents are made even more aware of the limitations they have on getting a reasonable job. This can be expected to increase stress and this is what was found in the present study.

The present research only marginally touched on the perceptions of environmental conditions as sources of stress. Travelling to school and noise at home and school were among some of the items in our measures and it was found that adolescents did not perceive these conditions as contributing very significantly to their stress profile.

Chen (1978) and Chen and Tai (1978) examined the sociological dimensions to urban life in Singapore in terms of living space, high-rise density living, noise pollution and other features. They found that most people adapt sooner or later to the new surroundings after living in small communities and kampongs. It appears that our sample of adolescents also adapt to features of urban living such as travel and noise. The travelling time for students can be as much as 2 - 3 hours a day which enables them to "sleep off" the effects of travel and the effects of school tension.

Noise pollution is a fact of Singapore life and where noise is a pollutant at home, examination of the protocols showed that the use of radio-cassette players with the earphone attachment appeared to counteract the noise of flat living. As far as school noise is concerned, children in Singapore are used to considerable levels of noise from within school such as loudspeaker interruption and noise from the classes seeping through window spaces constantly open due to the climate. Noise also comes from outside in the way of traffic and general street noise. This paints a fairly intense picture of environmental noise pollution in Singapore which children grow up with, and to which most of them can adapt.

Conclusion

In view of the sample size, broad generalisation must be made with caution about the research presented in this paper. However, it does appear that most students are able to cope with their stress. Students in Singapore are aware of high parental expectations vis-a-vis school performance; furthermore, the competitive ethos of school and home and in the wider context of society is a fact of life. When a country such as Singapore has not much else in the way of resource except human resource, its leaders have little alternative but to exploit it to the full. At present it seems personal, social and societal expectations are such that the perceived stress generated by these different sources of expectations provide a near-optimum context for coping with school and home demands relating to schooling. Instances of suicide and mental breakdown appear as yet to be lower than those recorded for a country like Japan, Mamoru (1981). Perhaps one of the most important lessons we have learnt from the present research is that students cope by adapting to the rigorous demands of both school and home in the context of present day Singapore. However, this raises a further question of how far can students and teachers stretch their adaptive powers to cope with more serious stressful situations that are likely to arise as we pass into the 1990s?

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Appendix 1Stress and Schooling

Sample Details - Whole Study

LEVEL	GENDER	STREAM			TOTAL N
		NORMAL	EXPRESS	SPECIAL	
Sec 1	M	50	50	50	150
	F	50	50	50	150
Sec 2	M	50	50	50	150
	F	50	50	50	150
Sec 3	M	50	50	50	150
	F	50	50	50	150
Sec 4	M	50	50	50	150
	F	50	50	50	150
Pre-U	M		106		
	F		106		212
TOTAL N					1412

Sample Details - Pre-University Group

	N	%
Science Students	90	43
Arts/Humanities Students	117	2
Commerce Students	5	55
TOTAL	212	100

APPENDIX 2

Measures used in the Present Study

(a) Behaviour Profile (Bortner and Rosenman 1967)

Items

1. Punctual/ontime
2. Competitive
3. Rushed
4. Patient R
5. Determined
6. Takes things one at a time R
7. Fast (eating, walking)
8. Many interests outside school
9. Satisfied with your school life R

Five point scale 1. Never 2. Ready 3. Sometimes 4. Often
5. Always R = reverse scoring

(b) Life Events (Holmes-Rahe Life Stress Inventory 1967)

Respondents asked to tick () events below if they occurred to them in last year

Items

1. You being separated from your family
2. Break up of a close friendship
3. In jail or other institution
4. Major personal injury or illness
5. Death of parent
6. Death of close family member
7. Major changes to health of a family member
8. Parental pressure to do well in school
9. Death of a close friend
10. Major change in family environment
less happy)
more happy) underline one
11. Your financial affairs
improved)
worse) underline one
12. Outstanding personal achievement e.g. good grades,
success in sport
13. Troubles with school peers
14. Troubles with teachers and principals
15. Change in residence
16. Change in school
17. Vacation
18. More time spent in school during vacation
19. Being tutored more often
20. Preparation and Celebration of
Chinese New Year
Deepavali
Hari Raya
Christmas
21. School Tests
22. Family Breakup

APPENDIX 2 Contd

(c) School Stress Factors (Cooper's Job Stress Questionnaire 1981)

Items

1. Relationship with my school principal or vice principal.
2. Relationship with my discipline teacher.
3. Relationship with my teachers.
4. My relationship with my school friends.
5. My workload in school.
6. My school work at home (homework).
7. Being tutored (outside school).
8. Giving tuition (outside school).
9. Travelling to school.
10. School Rules regulations.
11. What happens when I leave school and enter the job market.
12. School Examination.
13. ECA.
14. Studying two or more languages.

Five point scale 1:None 2:Some 3:Quite A lot 4:Much 5:Enormous

(d) Home-School Stress Conditions (Thomas E, 1987)

Items

1. I have differences of opinion with my teachers.
2. I have differences of opinion with my classmates.
3. I lack confidence in organising my schoolwork.
4. I find difficulty in meeting the demands made by different teachers.
5. I only get feedback when my schoolwork is unsatisfactory.
6. I have too much homework and too little time to do it.
7. Noise at home affecting homework.
8. Noise at school affecting my concentration.
- R 9. I get support from my parents.
- R 10. I get support from my classmates.
11. I feel family pressure to realise high expectations.
12. I get depressed about my school performance.

Five Point Scale 1:Never 2:Partly 3:Sometimes 4:Often
5:Always R:Reverse Scoring

APPENDIX 2 Contd

(e) Stress Symptoms (Gurin, Veroff and Feld 1960, modified)

- R 1. Do you ever have trouble getting to sleep or staying asleep?
- R 2. Have you been worried about being tense?
- R 3. Have there been times when you don't feel like eating?
- R 4. Do you feel worried if something unexpected happens?
- R 5. Do you feel mentally exhausted and have difficulty in concentrating or thinking clearly?
- R 6. Do you ever feel you just want to be alone?
- R 7. Have you ever felt that you were going to have a breakdown?
- R 8. Are you ever troubled by headaches or head pains?

Four point scale 1: A lot 2: Quite often 3: Sometimes
4: Never R: Reverse scoring

(d) Coping with Stress

If you think you cope with stress briefly write below how you do it.

Home events _____

School Events _____

Others: Specify (e.g. friendship, clubs, church) _____

APPENDIX 3

Means and Standard Deviations for Behaviour Profile Item (N=212)

Item	$\bar{X}$	SD
----	----	----
1. Punctual/on time	3.93	.78
2. Competitive	3.40	.80
3. Rushed	3.26	.79
4. Patient	2.60	.80
5. Determined	3.63	.85
6. Takes things one at a time	2.77	.89
7. Fast pace of life (eating, walking)	3.45	.92
8. Many interests outside school	3.12	.99
9. Satisfied with your school life	2.78	.92

Means and F Value for selected items of the
Behaviour Profile measures (N = 212)

	$\bar{X}$	F Value
	----	-----
Patience	2.60	
Many interests outside school	3.12	80.47
Fast pace of life	3.45	
Punctuality	3.93	

p < .001

Appendix 4

% Numbers of Students recording the 10 most
quoted Life Event items (N=212)

Item	% Numbers
1. You being separated from your family	- *
2. Break up of a close friendship	22
3. In jail or other institution	-
4. Major personal injury or illness	-
5. Death of parent	-
6. Death of close family member	-
7. Major changes to health of a family member	-
8. Parental pressure to do well in school	35
9. Death of a close friend	-
10. Major change in family environment	
less happy) underline one	-
more happy)	-
11. Your financial affairs worsened	27
12. Outstanding personal achievement	28
e.g. good grades, success in sport	
13. Troubles with school peers	-
14. Troubles with teachers and principals	-
15. Change in residence	-
16. Change in school	35
17. Vacation	42
18. More time spent in school during vacation	26
19. Being tutored more often	-
20. Preparation and Celebration of	
Chinese New Year	
Deepavali	79
Hari Raya	
Christmas	
21. School Tests	86
22. Family Breakup	-

* Values below 22% omitted

Means, Standard Deviations, Minimum and Maximum Values for Life
Events Measure for total sample and Arts-Science Stream
Differences and Gender Differences

	N	$\bar{X}$	S.D.	Min.	Max.
	-	-	----	----	----
Total Sample	212	170.46	89.3	0	533
Arts Stream	90	187.46	48.89	50	180
Science Stream	117	159.07	83.89	0	439
Females	106	165.68	83.55	13	434
Males	106	180.05	94.75	23	533

Appendix 5Means and Standard Deviations for items in the School Stress
Factor Measure (N = 212)

Item	$\bar{X}$	S.D.
-----	-	-----
1. Relationship with my school principal or vice principal	1.35	.36
2. Relationship with my discipline teacher	1.48	.39
3. Relationship with my teachers	1.92	.80
4. My relationship with my school friends	2.13	.98
5. My workload in school	3.40	1.09
6. My school work at home (homework)	3.35	1.08
7. Travelling to school	1.96	1.11
8. School Rules Regulations	1.51	.81
9. What happens when I leave school and enter the job market	3.19	1.20
10. School Examination	4.01	1.04
11. Extra Curricular Activities	2.13	.97
12. Studying two or more languages	2.20	1.01

Means and F Value for selected items from the
School Stress Factor Measure

Item	$\bar{X}$	F Value
-----	-	-----
Relationship with Discipline Teacher	1.48	
Travelling Time	1.96	
Extra Curricular Activities	2.13	223.04*
My Workload in School	3.40	
School Examinations	4.09	

* $p < .001$

Appendix 6Means and Standard Deviations for items in the
Home-School Stress Measure (N = 212)

Item ----	$\bar{X}$ -	S.D. ----
1. I have differences of opinion with my teachers	2.37	.75
2. I have differences of opinion with my classmates	2.88	.69
3. I lack confidence in organising my schoolwork	3.01	.91
4. I find difficulty in meeting the demands made by different teachers	3.15	.80
5. I only get feedback when my schoolwork is unsatisfactory	2.84	.95
6. I have too much homework and too little time to do it	3.52	.97
7. Noise at home affecting homework	2.61	1.15
8. Noise at school affecting my concentration	2.56	.90
9. I get support from my parents	2.69	1.27
10. I get support from my classmates	3.03	1.00
11. I feel family pressure to realise high expectations	3.01	1.23
12. I get depressed about my school performance	3.38	.84

Means and F Values for Selected Items
from the Home-School Stress Measure

Item ----	$\bar{X}$ -	F Value -----
I have differences of opinion with my teachers	2.37	
I only get feedback when my homework is unsatisfactory	2.84	
I get support from my classmates	3.03	55.57*
I have too much homework and too little time to do it	3.52	

p < .001

Appendix 7

Means and Standard Deviations for items in
the Stress Symptoms Measure (N = 212)

Item	$\bar{X}$	S.D.
1. Do you ever have trouble getting to sleep or staying asleep	1.92	.75
2. Have you been worried about being tense?	2.17	.72
3. Have there been times when you don't feel like eating?	1.91	.72
4. Do you feel worried if something unexpected happens?	2.63	.78
5. Do you feel mentally exhausted and have difficulty in concentrating or thinking clearly?	2.39	.75
6. Do you ever feel you just want to be alone?	2.26	.81
7. Have you ever felt that you were going to have a breakdown?	1.71	.73
8. Are you ever troubled by headaches or head pains?	2.01	.88

Means and F Value for Selected items from the
Stress Symptoms Measure (N = 212)

Item	$\bar{X}$	F Value
Have you ever felt you were having a breakdown	1.71	
Have you been worried about being tense	2.17	79.78*
Do you feel worried if something unexpected happen	2.63	

* $p < .001$